

## **Pressurized High Temperature Polymerization Process and Polymerization System Used Therein**

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### **Abstract of Disclosure**

The present invention is directed to a novel high temperature polymerization process operating at high pressures for producing a polymer. The process includes conveying hybrid reactor mixtures, which  
10 include one or more hybrid reactor monomers and one or more hybrid reactor initiators to one or more hybrid reactors. The hybrid reactors are maintained at effective hybrid polymerization temperatures and sub-reflux polymerization gage pressures to cause polymerization of a portion of the hybrid reactor monomers into the polymer. The process further includes  
15 conveying hybrid reactor contents from the hybrid reactors to one or more batch reactors maintained at effective batch polymerization temperatures and reflux polymerization pressures to cause polymerization of a remaining portion of the hybrid reactor monomers into the polymer. The hybrid reactors are smaller in volume than the batch reactors. By utilizing  
20 the hybrid/batch reactor combination, the process of the present invention can be operated under safe working conditions. The process of the present invention also allows control of the polydispersity and molecular weight of the resulting polymers. As a result, the polymers made therefrom can be used as binders in compositions, such as coating  
25 compositions used in the automotive refinish and OEM applications having desired coating properties. The present invention is also directed to a polymerization system used in the process of the present invention.